KODAK 9000 3D Extraoral Imaging System

Installation Guide

Notice

Congratulations on your purchase of the KODAK 9000 3D Extraoral Imaging System. Thank you for your confidence in our products and we will do all in our power to ensure your complete satisfaction.

The Installation Guide for the KODAK 9000 3D Extraoral Imaging System includes information both on the Panoramic features as well as the 3D features. If you have purchase only the KODAK 9000 Panoramic system, information relevant to 3D does not apply to your radiological system. We recommend that you thoroughly familiarize yourself with this Guide in order to make the most effective use of your system.

The information contained in this Guide may be subject to modification without notice, justification or notification to the persons concerned.

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This document is originally written in English.

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KODAK 9000 3D Extraoral Imaging System, complies with Directive 93/42/CEE relating to medical equipment.

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Chapter 1
About This Guide

Conventions in this Guide

The following special messages emphasize information or indicate potential risk to persons or equipment:

WARNING
Warns you to avoid injury to yourself or others by following the safety instructions precisely.

CAUTION
Alerts you to a condition that might cause serious damage.

IMPORTANT
Alerts you to a condition that might cause problems.

NOTE
Emphasizes important information.

TIP
Provides extra information and hints.

Note to the User

WARNING
X-rays can be harmful and dangerous if not used properly. The instructions and warnings contained in this guide must be therefore carefully followed.

As a manufacturer of radiology units that conform to stringent radiological protection standards in force throughout the world, we guarantee a maximum degree of protection against radiation hazards. Nonetheless, you are handling a radiology unit specially designed to emit x-ray doses in order to carry out a medical diagnosis.

The room in which your radiology Unit is to be installed must comply with all official regulations applicable to protection against radiation. You must install your radiology unit in a room protected against x-ray emission. This room must reduce the frequency interferences of the 30MHz to 1GHz band to at least 12db.

Your local representative will assist you in the initial use of your radiology Unit and will supply any relevant information you may require.

To use and operate your panoramic unit and your digital imaging software you must follow the instructions contained in this guide.

Warning and Safety Instructions

When operating the Kodak 9000 unit, observe the following warning and safety instructions:

DANGER OF ELECTRIC SHOCK

This is an electrical Unit. DO NOT expose it to water spray. Such action may cause an electric shock or a malfunction of the Unit.

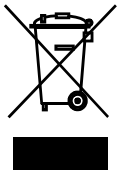
LASER WARNING

For maximum safety, advise the patient not to look at the beam. Before turning on the beams, lower the Frankfurt plane beam to the lowest level. While making adjustments, ensure that the beam is not directed into the patient's eyes.

WARNINGS:

- **You are responsible for the operation and maintenance of this unit. Only legally qualified persons can operate this unit. DO NOT open the cover of the unit.When necessary, have a trained authorized service technician carry out inspection and maintenance operations.**
- **Install this Unit in an x-ray room that complies with current installation standards. From this location, you must be able to maintain visual or audio communication with the patient and be able to access the Acquisition interface module during exposure. This Unit must be permanently connected to the ground with a fixed power supply cable.**
- **DO NOT place the PC and the peripheral equipment connected to it in the immediate vicinity of the patient in the Unit. Leave at least 1.5 m distance between the patient and the Unit. The PC and the peripheral equipment must conform to the IEC60950 standard.**
- **See your computer installation guide for details of the data processing system, PC and screen. Leave a sufficient amount of clear space around the CPU to ensure that it is properly ventilated.**
- **To obtain maximum image quality and visual comfort, position the screen to avoid direct light reflections from internal or external lighting.**
- **DO NOT operate the Unit if there is the threat of an earthquake. Following an earthquake, ensure that the Unit is operating satisfactorily before using it again. Failure to observe this precaution may expose patients to hazards.**
- **X-ray equipment is hazardous to patients and the operator if you do not observe the exposure safety factors and operating instructions.**
- **DO NOT place objects within the field of operation of the Unit.**
- **The patient should wear a protective lead-lined shoulder apron, unless other Radiation Protection Protocols apply locally.**
- **Disinfect any parts of the Unit that come into contact with the patient and the operator after each patient has been exposed to x-rays.**
- **While adjusting the height of the Unit, ensure that the patient is kept clear of the mechanism.**
- **When the Unit is not in use, ensure that the ON/OFF switch is set to OFF (O).**
- **If the Unit develops a fault, switch it to off (O), display an “Unserviceable” notice and contact a service technician.**
- **To dispose of the Unit or its components, contact a service technician.**
- **Ask the patient to refrain from moving during the entire period of exposure.**
- **Ask the patient to remain still until the Unit arm has stopped moving and the RESET movement has completed.**
- **DO NOT use this Unit in conjunction with oxygen-rich environments. This Unit is not intended for use with flammable anesthetics or flammable agents.**

Marking and Labeling Symbols

	Type B device symbol complying with the IEC 60601-1 standard
	In the EEC, this symbol indicates: DO NOT discard this product in a trash receptacle; use an appropriate recovery and recycling facility. Contact your local sales representative for additional information on the collection and recovery programs available for this product
	WARNING and **IONIZING RADIATION** symbols warn you about radiation dangers.
 	LASER WARNING Laser radiation. DO NOT stare into the beam. Class 2 laser product. Maximum output power: 1mW, 650 nm (IEC 60825-1 standard) This Unit emits laser radiation.
N	Connecting point to the neutral conductor
L	Connecting point to the live conductor
	Protection ground **(G)**
	Functional ground

Responsibility and Warranty

Only damage affecting products themselves will be considered. The client can in no case claim damage compensation if it does not purely concern the product itself and provided that this exclusion of responsibility does not infringe any legal measures.

This warranty does not cover damages and faults due to accident, incorrect usage, improper use, negligence, or wear and tear due to normal use.

Carestream Health, Inc. can not be held liable for the consequences resulting from the non-application of the instructions contained in the installation and user manuals, namely bodily harm, profit loss, operational interruptions, data loss, loss of a financial nature, or any direct or indirect damage.

Carestream Health, Inc. reserves the right to examine any presumed defect.

Clients are not entitled to delay the payment of their bills or any financial deductions by way of products reputed to be faulty.

Due to the continuous development of its products, Carestream Health, Inc. reserves the right to amend at any time the manual and products mentioned therein, without justification or notification to the people involved.

Our products are guaranteed in their original packaging. Carestream Health, Inc. cannot be held liable for damages resulting from transportation.

Consumable spares, software and accessories are excluded from the warranty.

Chapter 2

KODAK 9000 3D DIGITAL IMAGING UNIT OVERVIEW

The KODAK 9000 3D digital imaging unit is compliant with the requirements of the EEC and international medical standards.

The KODAK 9000 3D Unit has been designed to carry out the following radiological examinations:

- Panoramic
- Maxillary Sinus
- Temporomandibular Joints (TMJ)
- 3D images

The KODAK 9000 3D Unit is composed of the following functional components:

- Control Panel
- Remote Control

Functional Overview

The following figures illustrate the components of the KODAK 9000 3D Unit.

Figure 2-1 illustrates the up and down movement of the Unit mobile component and the 180° rotation of the rotative arm.

Figure 2–1 KODAK 9000 3D Unit

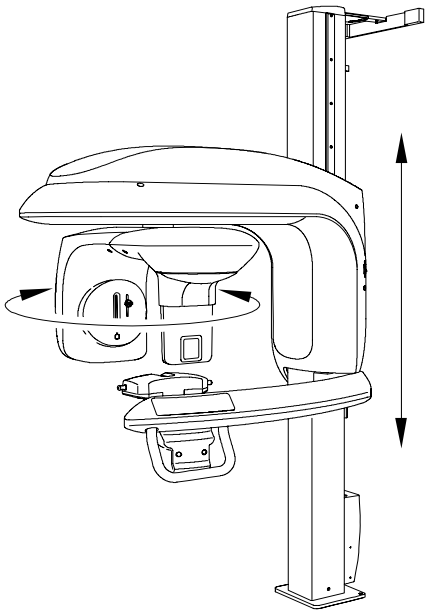
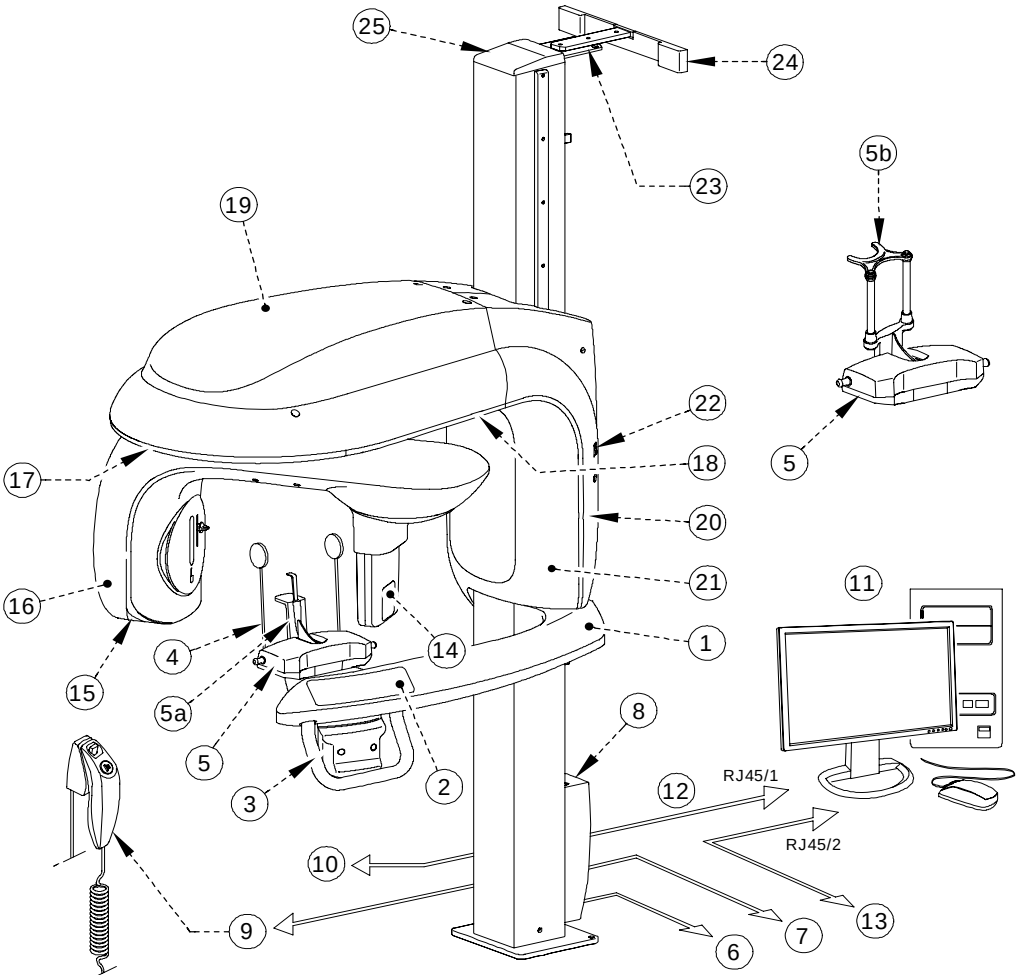
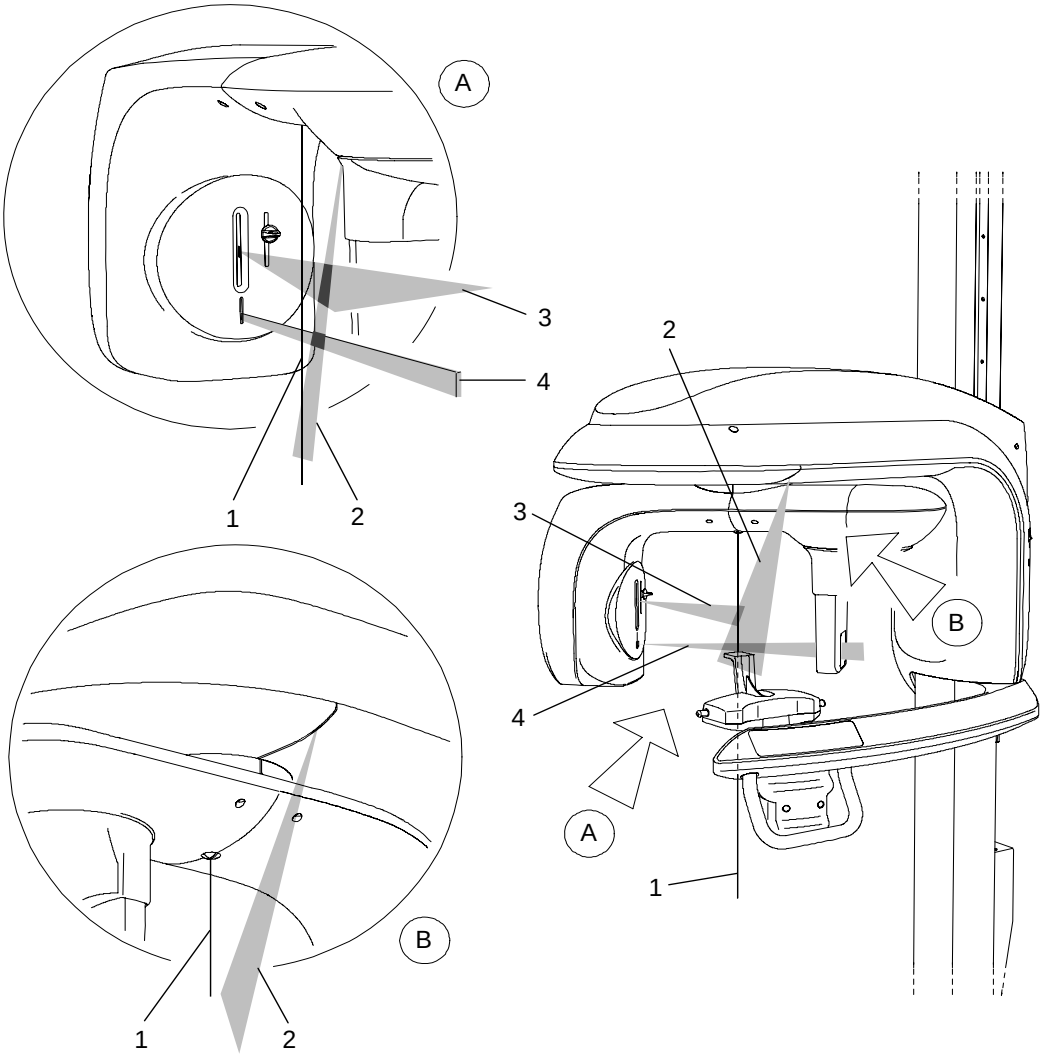


Figure 2–2 KODAK 9000 3D Unit functional components



1	Unit fixed arm	**13**	LAN RJ45/2
2	Control panel	**14**	Sensor
3	Hand grips	**15**	Generator
4	Temple supports	**16**	Unit rotative arm
5	Chin rest base	**17**	Under the head front cover
5 a	Panoramic chin rest	**18**	Under the head back cover
5 b	3D chin rest and forehead support	**19**	Head cover
6	Unit mains connecting terminal	**20**	Column side cover
7	Green warning lamp (x-ray emission indicator)	**21**	Column inside cover
8	Column connecting terminals	**22**	ON/OFF button
9	X-Ray remote control	**23**	Wall mounting brackets
10	Door safety switch	**24**	Wall mounting brackets cover
11	PC hosting the imaging and acquisition software	**25**	Column upper cover
12	Ethernet outlet RJ45/1		

Figure 2–3 KODAK 9000 3D Unit Positioning Laser Beam components



1 3D central positioning laser beam

2 Mid-sagittal positioning laser beam

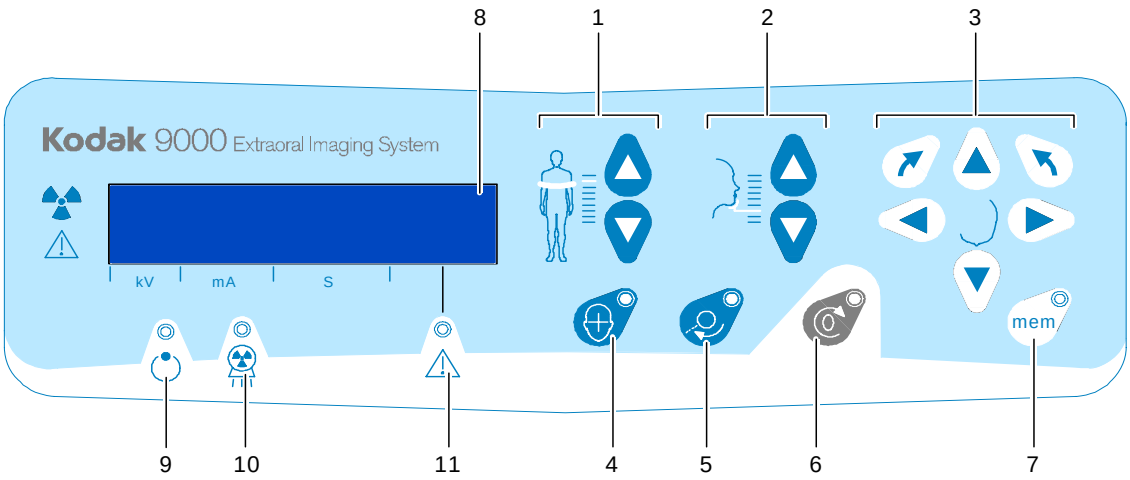
3 Horizontal positioning laser beam

4 3D Field of View (FoV) positioning laser beam

Control Panel Overview

The Control Panel is an alphanumeric digital soft touch console. It allows the operator to control certain Unit functions. It also displays the operating parameters and error messages.

Figure 2–4 Unit Control Panel



1 **Height Adjustment button:** Adjusts the height of the unit to the height of the patient.

2 **Head Adjustment button:** Adjusts the patient head to the x-ray beams.

3 **3D Adjustment button:** Adjusts the Unit arm movements to correctly position the patient for 3D acquisition.

4 **Laser Beam button:** Activates the beams to correctly position the patient.

5 **3D Position Verification button:** Verifies the correct 3D positioning.

6 **Reset button:** Resets the Unit arm to the initial position to enable the patient to enter and exit the Unit.

7 **3D Memorization button:** Memorizes the 3D current positioning parameter settings that override the default parameters.

8 **Display Screen:** Displays the current acquisition parameters and the error messages.

9 **Ready Indicator LED:** Green indicates the Unit is ready for acquisition.

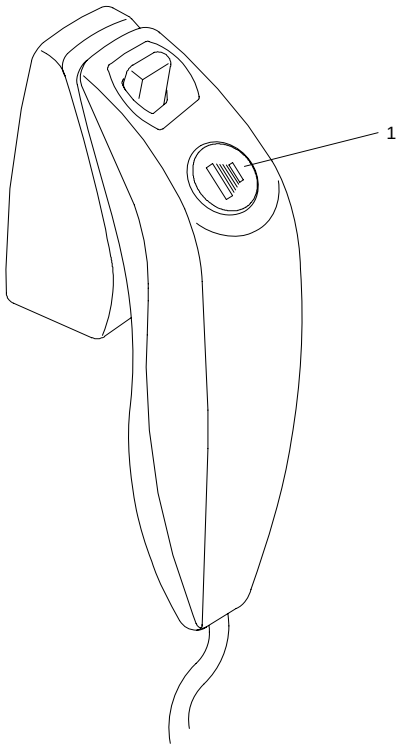
10 **X-Ray Emission LED:** Yellow indicates x-rays are being emitted.

11 **System Status LED:** Red indicates error alerts.

X-Ray Remote Control Overview

The x- ray remote control enables you to launch a radiological image acquisition via the exposure button from outside the x-ray room. You must press and hold the exposure button until the end of acquisition. Premature release of the exposure button interrupts the acquisition.

Figure 2–5 X-Ray Remote Control



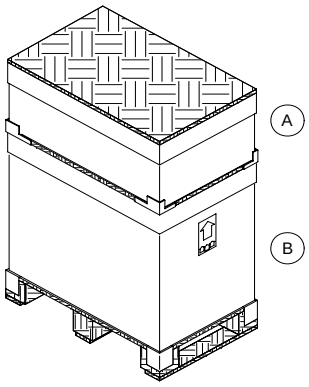
1 Exposure button: launches image acquisition.

Chapter 3
KODAK 9000 3D PACKAGING

Standard Packaging

When unpacking the boxes, ensure that you received the following components.

- Head assembly components (A & B)
- Column assembly component



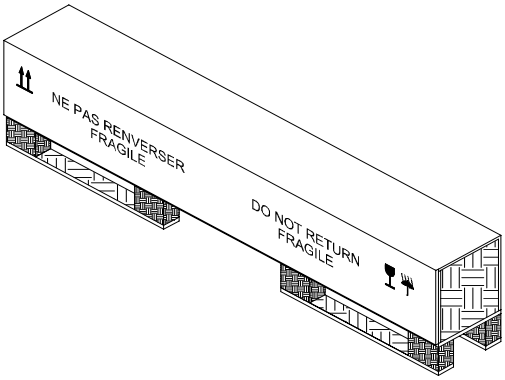


Table 3–1 Head Assembly Components

Box	Components	Dimension (cm)	Weight
(A)	• Fixed arm • Unit covers	800mm (D) x 1200mm (L) x 1540mm (H)	190 kg
(B)	• Unit head • X-ray remote control • Positioning accessories • Technical accessories • Documentation		

Table 3–2 Column Assembly Components

Box	Components	Dimension (cm)	Weight
Column assembly	• Unit column • Wall mounting bracket • Wall bracket cover • 3 meter mains power cable • Upper column cover	350mm (D) x 2300mm (L) x 460mm (H)	74 kg

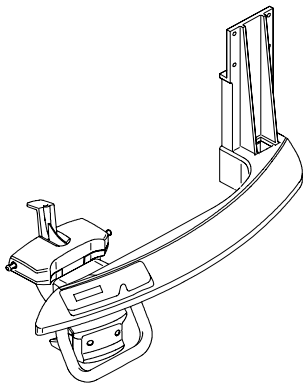
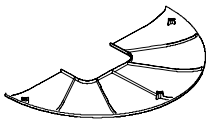
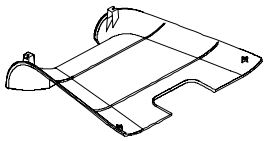
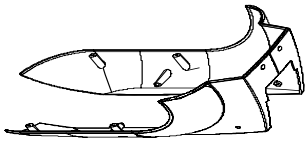
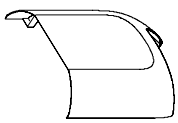
Head Assembly

The head assembly is composed of 2 boxes (A & B) superposed.

Box (A) Components

Table 3-3 lists the box A components.

Table 3–3 Box (A) Components

Product	Description	Quantity
	Unit fixed arm	1
	Under the head front cover	1
	Under the head back cover	1
	Column side cover	1
	Column inside cover	1

Box (B) Components

The following Tables list the box B components.

Table 3–4 Unit Head

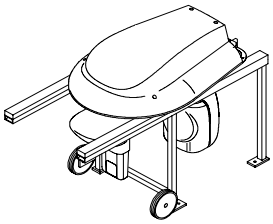
Product	Description	Quantity
	3D Head assembly and the head cover	1

Table 3–5 Different Components

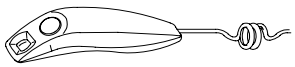
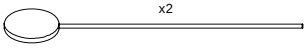
Product	Description	Quantity
	X-ray remote control	1
	Mounting hook for the x-ray remote control	1
	A set of right and left temple supports	2

Table 3–6 3D Positioning Accessories and Replacement Parts

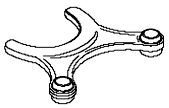
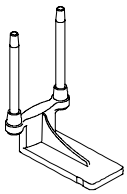
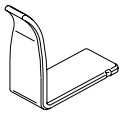
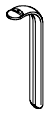
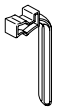
Accessory	Description
	3D bite block
	3D chin rest

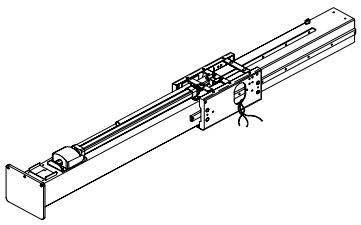
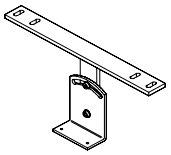
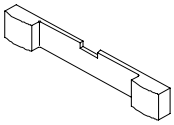
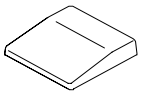
Table 3–7 Panoramic Positioning Accessories and Replacement Parts

Accessory	Description
	• Panoramic chin rest • TMJ x2 chin rest • Sinus chin rest
	TMJ x4 nose rest
	Panoramic standard bite block
	Bite block for edentulous patients
	Single use sheaths for bite blocks (500 pcs box)

Column Assembly

Table 3-8 lists the column assembly components.

Table 3–8 Column Assembly

Product	Description	Quantity
	Column assembly	1
	Wall mounting brackets	1
	Wall mounting brackets cover	1
	Column upper cover	1
	3 meter mains power cable	1

Chapter 4
SITE PREPARATION BEFORE INSTALLATION

IMPORTANT

Prior to placing the order and before installation, carefully check the following requirements for the x-ray room.

Standard Compliance

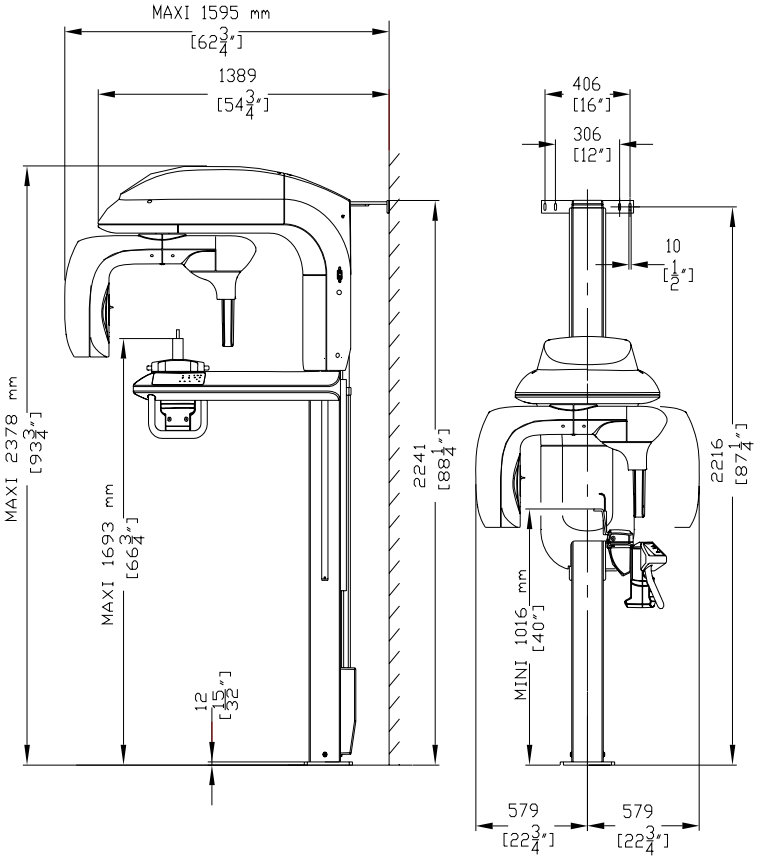
Install the Unit in an x-ray room compliant with all official regulations applicable to protection against radiation. This room must reduce the frequency interferences of the 30MHz to 1GHz band to at least 12db.

Environmental Requirements

Check the following ambient operating condition requirements of the x-ray room before installing the Unit:

- **Temperatures:** 5 ~35 °C
- **Relative humidity:** 30 ~ 85%
- **Atmospheric pressure:** 700 ~ 1060 hpa

Unit Dimensions

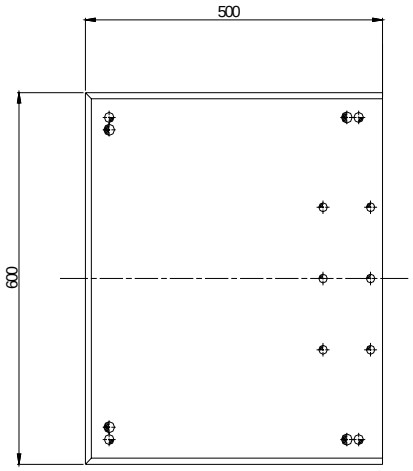


The Unit dimensions illustrated in the above figure are as follows:

- Maximum height of the Unit (2378mm)
- Minimum (1016mm) and maximum (1693mm) height of the chin rest
- Width (1158mm) and depth (1595mm) of the Unit
- Dimensions of the column and attaching parts

WARNING

If you need to add a base plate you must add 15mm to the height of the Unit.



Electrical Requirements

WARNING*

You MUST select the operating voltage when placing an order. The operating voltage CANNOT be modified on site.

The Unit can operate at:

- 100/110/130 V 50/60 Hz
- 230/240 V 50/60 Hz

Table 4–1 Optional Operating Voltages of the Unit

Nominal voltage * (no load)	Minimum	Maximum	Maximum line current
100 V - 130 V	90 V	143 V	20 A
230 V - 240 V	207 V	264 V	10 A

CAUTION

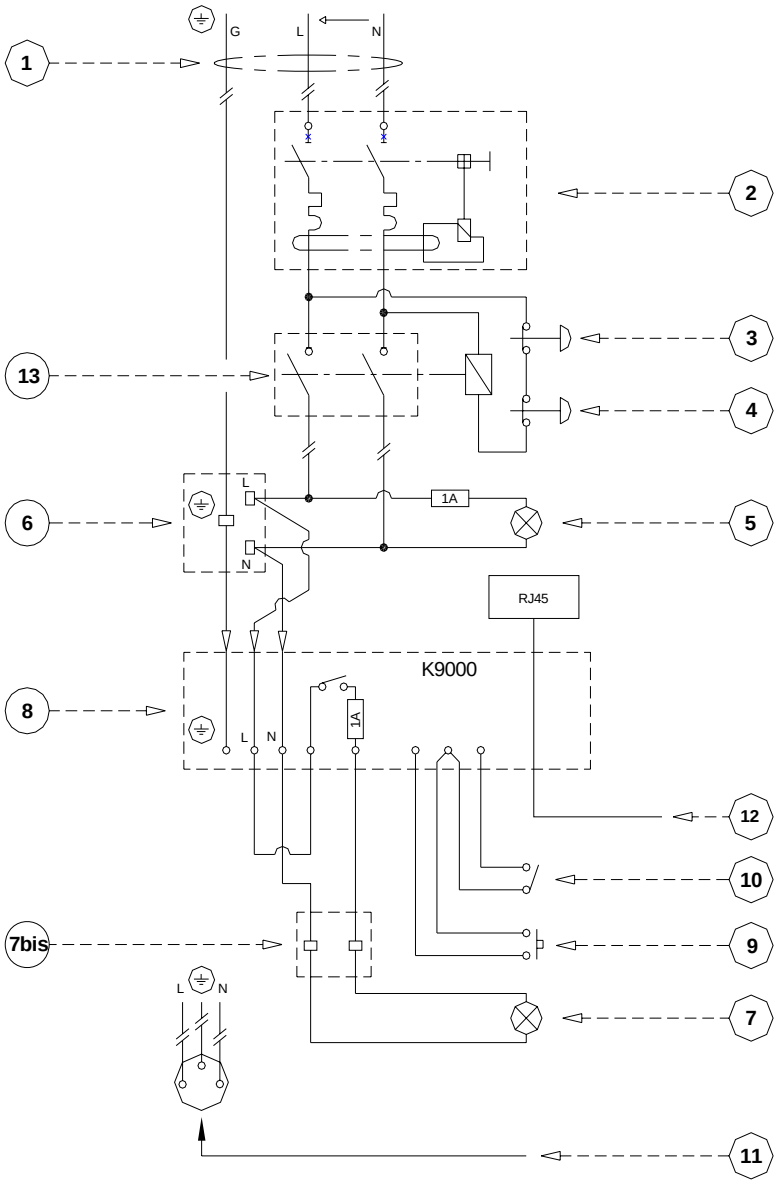
The power supply line must be equipped with a connection box that ensures a constant connection. It must not be possible to connect the Unit to the power supply without using a tool. The Unit must be protected against any accidental disconnection.

If other units are installed on the same line, interference and voltage fluctuations can cause the radiological Unit to operate abnormally. We strongly recommend that a separate electrical line be dedicated to supply power to the KODAK 9000 3D Unit.

This line should be protected by a circuit breaker with a maximum current of:

- 16 A at 230/240 V
- 20 A at 110/130 V
- A differential circut breaker of 30 mA

Figure 4–1 Electrical Diagram of the X-ray Room and KODAK 9000 3D Connections



1	General mains	**7bis**	X-ray warning lamp connecting terminal
2	Differential circuit breaker	**8**	Column connecting terminals
3	Red color actuator emergency stop push-button	**9**	X-ray remote control
4	Red color actuator emergency stop push-button	**10**	Door safety switch
5	Red warning lamp, power ON indicator	**11**	Mains outlet (for electric tools)
6	Unit mains connecting terminal	**12**	Ethernet outlet (RJ45/1)
7	Green warning lamp, x-ray emission indicator	**13**	Contactor

A single-phase alternating current power supply is required and the electrical installation specifications should be as follows:

Table 4–2 Electrical Installation Specifications

Supply Voltage	230V/240V	100V/110V/ 130V	
Frequency	50/60 Hz	50/60 Hz	
Electrical supply	6 kW	6 kW	
Line current required	16A	20A	
Cable cross-section according to length	For 30 m: 2.5 mm2	For 10 m: 2.5 mm2	
Max. line impedance	0.5	0.12	
Differential circuit breaker (2)	30 mA	30 mA	
Maximum current to trip circuit breaker	16A	20A	Protect the power supply line with a differential circuit breaker that trips at maximum current.
Specifications of 2 red color actuator emergency stop push-button (3) and (4)	250V 6A UL listed	250V 6A UL listed	• Install these stop push-buttons to simultaneously, switch off the current to the active conductors of the radiological installation and exclude any other electric equipment. • Locate (3) inside the x-ray room, near the Unit, for the patient to quickly cut the power supply if necessary. • Locate (4) outside the x-ray room, near the x-ray remote control for the operator to quickly cut the power supply if necessary. • Maintain them in OFF (open) position until a deliberate action is performed.
Specifications of the warning lamps (5) and (7)	60 W	60 W	• Locate the red warning lamp (5) outside the x-ray room to indicate the Unit is active (1 lamp at each access point). • Locate the green warning lamp (7) outside the x-ray room to indicate the x-ray emission.

Table 4–2 Electrical Installation Specifications

Contactor (13)	16A-250V UL listed	20A-250V UL listed	
Door Safety Switch (9)	1A / 250V	1A / 130V	Optionally, connect the door safety switch (9) that deactivates the x-ray remote control if the door remains open.

Use the following switches:

Emergency Stop Switch:

Manufacturer: Cutler-Hammer

Ref:

- E22AT111
- E22AT112

Contactor:

Manufacturer: Telemecanique

Ref: LC1 D4011

- F6 (110/130 V - 60 Hz)
- P5 (230/240 V - 50 Hz)
- U6 (230/240 V - 60 Hz)

IMPORTANT

If you cannot use the above manufacturer devices, use an equivalent emergency switch and contactor in the UL list with the same specifications. For more information, see UL 2601.1 clause 22.7.

X-Ray Room Requirement

IMPORTANT

Use an appropriate wall fixing system suitable for the type of wall construction. See the examples below.

The following illustrations provide examples of wall types and fixations.

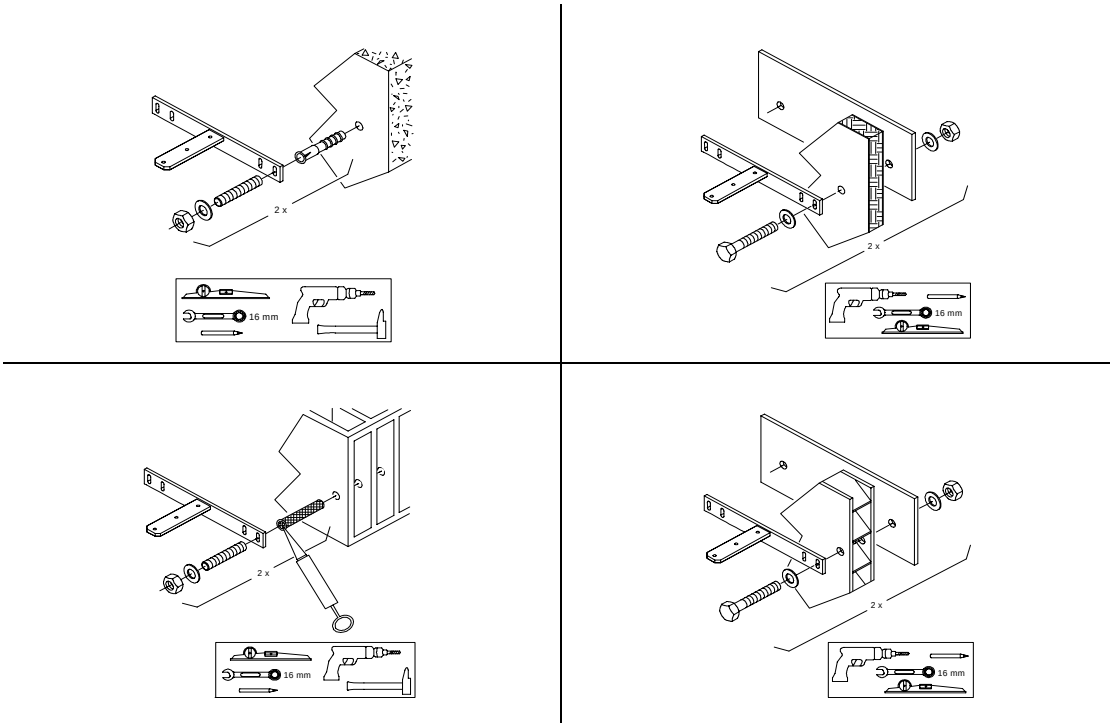


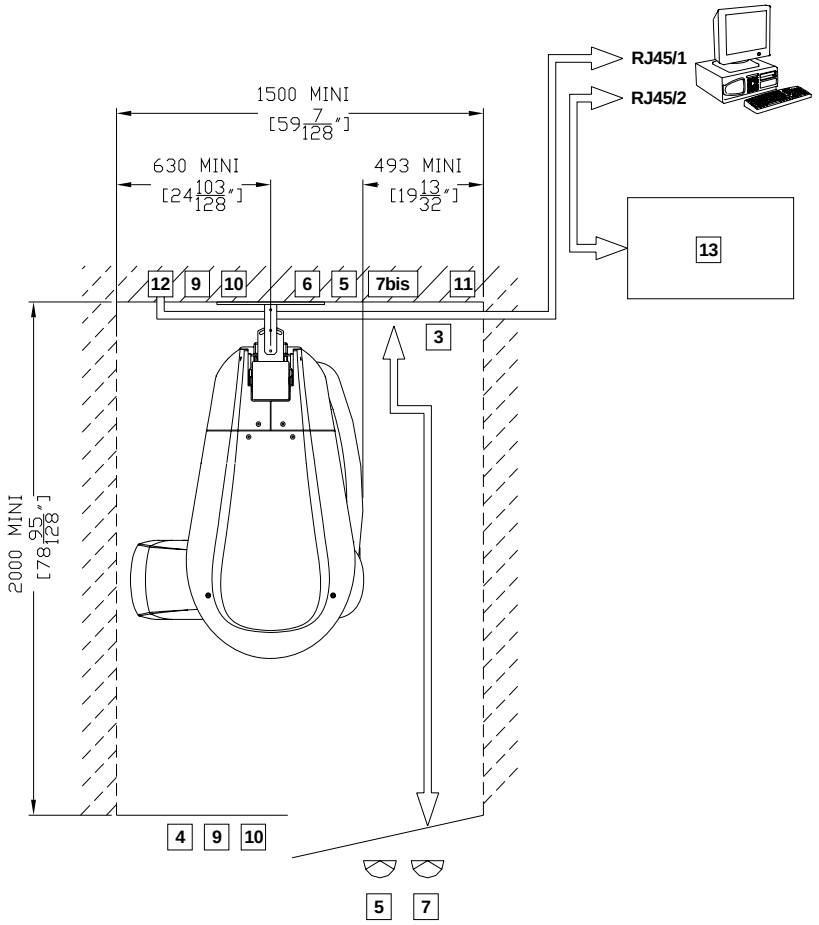
Table 4–3 X-Ray Room Requirements

Room Components	Minimum Requirement	Comments
Width of the door	75 cm (30")	
Height of the ceiling	240 cm (95")	If needed, a shorter column is possible by special order.
Strength of the wall	Withstanding an extraction force of 150 kPa at each point of attachment.	It is the responsibility of the installer to choose an appropriate fixing system that withstands the extraction force.
Load-bearing capacity of the floor	500 kg/m2	The floor must be solid and flat.
Required space for the KODAK 9000 3D Unit	1500 (L) x 2000 (D) x 2400 (H) mm	

IMPORTANT

Install the Unit where a minimum amount of space is provided to allow easy access for the patient or the maintenance technician (see Figure 4-2).

Figure 4–2 Minimum X-Ray Room Space Configuration



3	Red color actuator emergency stop push-button	**9**	X-ray remote control
4	Red color actuator emergency stop push-button	**10**	Door safety switch
5	Red warning lamp, power ON indicator	**11**	Mains outlet (for electrical tools)
6	Unit mains connecting terminal	**12**	Ethernet outlet (RJ45/1)
7	Green warning lamp, x-ray emission indicator	**13**	Local Area Network (LAN), (RJ45/2)
7bis	X-Ray warning lamp connecting terminal		

WARNING

You MUST prepare the appropriate electrical requirements and configurations of the x-ray room before installing the Unit. You MUST locate separately the following low voltage and high voltage connections:

- Low Voltage: (12), (9), (10)

- High Voltage: (6), (5), (7bis)

PC System Requirements

This section specifies the minimum PC system requirements for KODAK 9000 3D digital imaging software.

IMPORTANT

It is MANDATORY to check that the PC system configuration is compatible with the PC system requirements for the KODAK 9000 3D software. If necessary you MUST update your PC system configuration. KODAK 9000 3D MUST be connected to the PC via a point-to-point Ethernet link and not via a LAN. DO NOT place the PC and the peripheral equipment connected to it in the immediate vicinity of the patient in the Unit. Leave at least 1.5 m distance from the Unit. The PC and the peripheral equipment must conform to the IEC 60950 standard.

Table 4–4 Minimum PC System Requirements

Item	Minimum Workstation Image Viewing Requirements	Minimum Workstation Acquisition Requirements	Comments
CPU	2 GHz Intel Duo Core	3 GHz Intel Pentium 4	
RAM	2 GB	2GB	RAM has a major impact on system performance.
Hard disk drive	• 1.2 GB for software installation • 80 GB free space to use the software	1.2 GB for software installation	
Graphic board	Nvidia / ATI based board supporting Open Glide 1.2 with 256 MB of video RAM on AGP x8 video bus (example: Nvidia GeForce 6800 GT)	Nvidia board on PCI Express video bus, minimum GeForce 8800 GTS 640 MB of video RAM, or Quadro FX 4600 768 MB of video RAM	The video RAM has major impact on system performance.
Monitor	• 1 monitor • 17" or larger • 1024 x 768 minimum screen resolution - 32 bits color mode	• 1 monitor • 17" • 1024 x 768 minimum screen resolution	Your monitor is a vital component in displaying quality images. Low-quality screens will prevent you from proper diagnoses and treatment.
Operating system	• Windows 2000 SP4 • Windows XP Home / Pro edition SP2 • Windows Vista 32 bits	• Windows 2000 SP4* • Windows XP Home / Pro edition SP2 • Windows Vista 32 bits*	
Ethernet interface	1 Ethernet interface	2 Ethernet interfaces (100Mbits)	
CD/DVD drive	A CD-ROM drive is required to install the product.	A CD-ROM drive is required to install the product.	
Backup Media	Removable/portable, external hard disk drive	Removable/portable, external hard disk drive.	We strongly recommend a daily backup of x-ray images and patient records.
*** NOTE: The indicated operating systems considerably increase the 3D volume image reconstruction time. The normal duration of a few minutes is increased by more than an hour.**			

Chapter 5
INSTALLING THE KODAK DENTAL IMAGING SOFTWARE

Before installing the KODAK Dental Imaging Software, check that:

- The computer has all the PC system requirements
- You have the software CD

To install the KODAK Dental Imaging Software, follow these steps:

1. Insert the software CD in the CD-ROM drive of the computer.

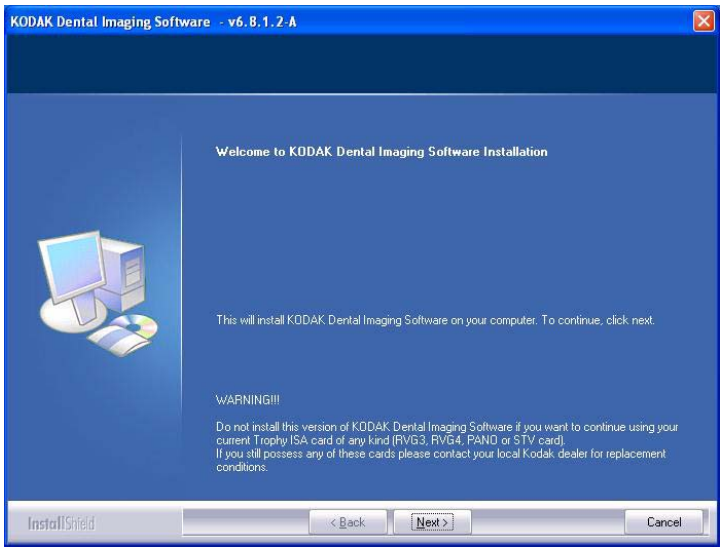
   Wait for the installation program to start. If the program does not start automatically, click **Start > Run** and enter **D:\setup.exe** if D is the letter for the CD-ROM drive, or the letter of the relevant drive on the computer.

2. The **Choose Setup Language** dialog box is displayed. Select the installation language and click **OK.**

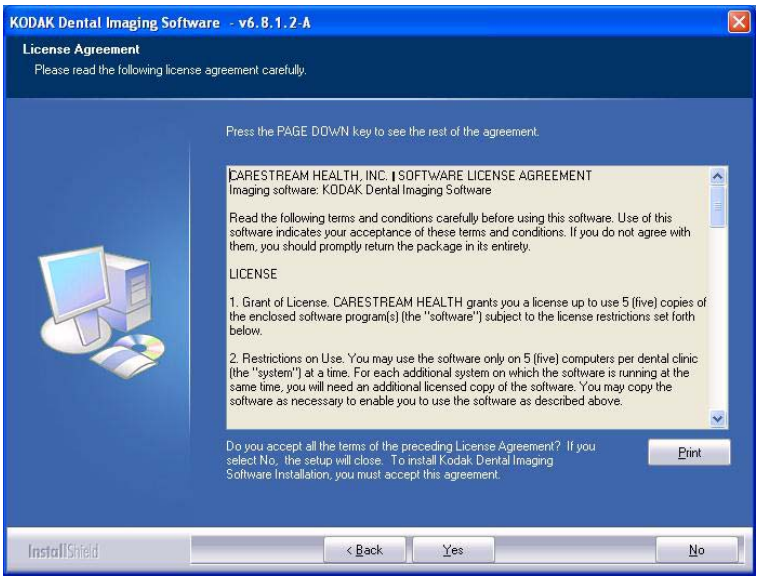
3. The **Kodak Dental Imaging Software** welcome page and the **InstallShield wizard** are displayed.

InstallShield Wizard
Kodak Dental Imaging Software Installation Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Checking Operating System Version
Cancel

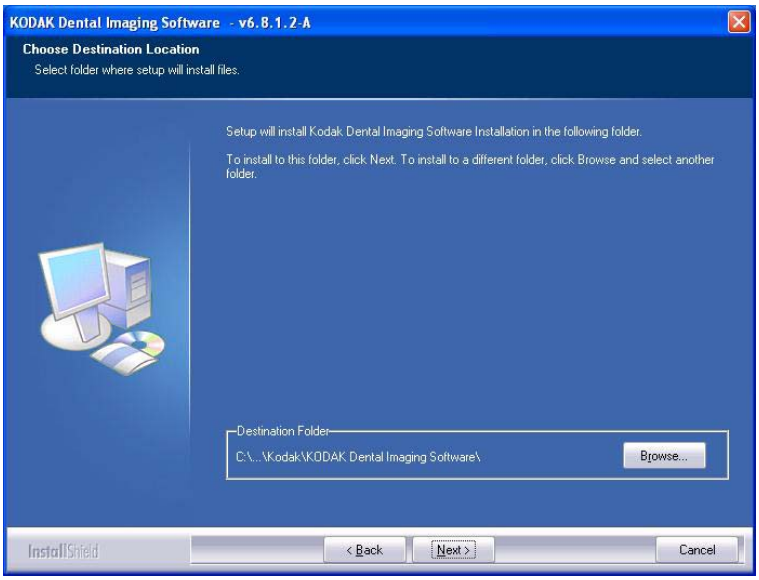
4. The **Welcome to KODAK Dental Imaging Software Installation** dialog box is displayed. Click **Next** to launch the installation.


KODAK Dental Imaging Software - v6.8.1.2-A
Welcome to KODAK Dental Imaging Software Installation
This will install KODAK Dental Imaging Software on your computer. To continue, click next.
WARNING!!!
Do not install this version of KODAK Dental Imaging Software if you want to continue using your current Trophy ISA card of any kind (RVG3, RVG4, PAN0 or STV card).
If you still possess any of these cards please contact your local Kodak dealer for replacement conditions.
InstallShield
< Back
Next >
Cancel

5. The **License Agreement** dialog box is displayed. Accept and click **Yes.**


KODAK Dental Imaging Software - v6.8.1.2-A
License Agreement
Please read the following license agreement carefully.
Press the PAGE DOWN key to see the rest of the agreement.
CARESTREAM HEALTH, INC. | SOFTWARE LICENSE AGREEMENT
Imaging software: KODAK Dental Imaging Software
Read the following terms and conditions carefully before using this software. Use of this software indicates your acceptance of these terms and conditions. If you do not agree with them, you should promptly return the package in its entirety.
LICENSE
1. Grant of License. CARESTREAM HEALTH grants you a license up to use 5 (five) copies of the enclosed software program(s) (the "software") subject to the license restrictions set forth below.
2. Restrictions on Use. You may use the software only on 5 (five) computers per dental clinic (the "system") at a time. For each additional system on which the software is running at the same time, you will need an additional licensed copy of the software. You may copy the software as necessary to enable you to use the software as described above.
Do you accept all the terms of the preceding License Agreement? If you select No, the setup will close. To install Kodak Dental Imaging Software Installation, you must accept this agreement.
Print
InstallShield
< Back
Yes
No

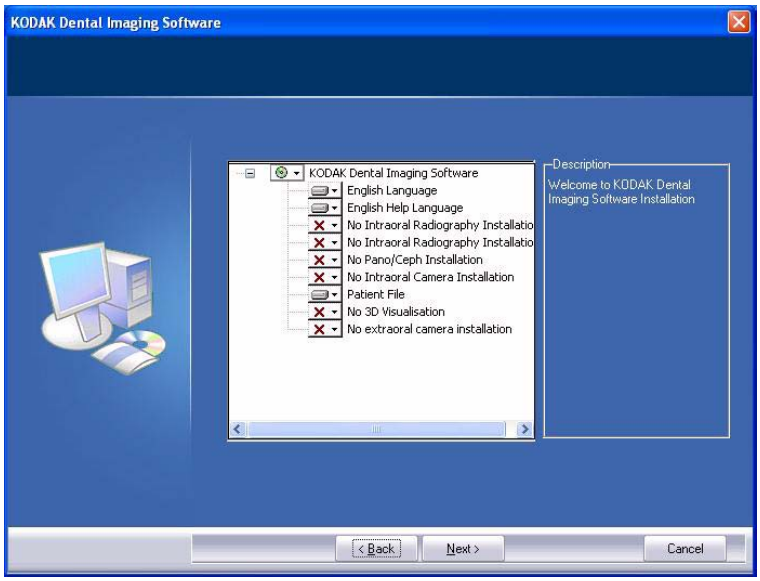
6. The **Choose Destination Location** dialog box is displayed. Click **Next** if you accept the default destination folder (c:\program files\Kodak\Kodak Dental Imaging Software) or browse to choose another destination folder.


KODAK Dental Imaging Software - v6.8.1.2-A
Choose Destination Location
Select folder where setup will install files.
Setup will install Kodak Dental Imaging Software Installation in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\...\Kodak\KODAK Dental Imaging Software\
Browse...
InstallShield
< Back
Next >
Cancel

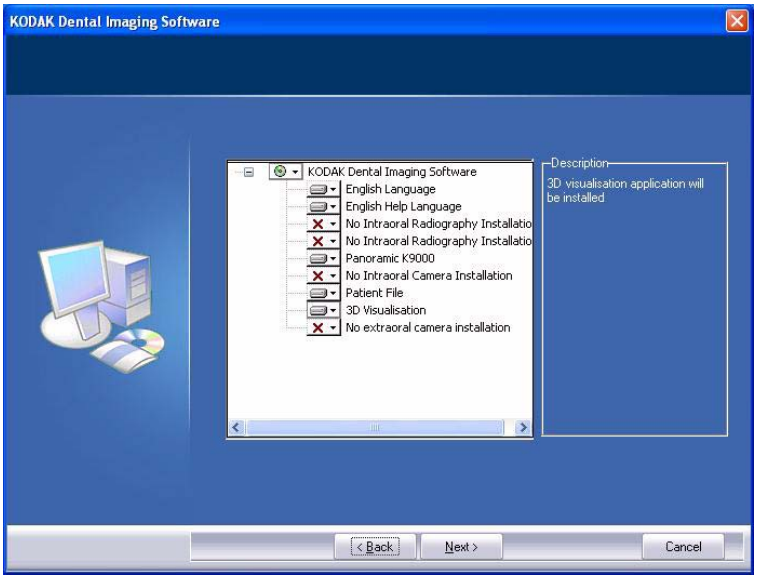
NOTE

If you are upgrading the software, the default destination folder is the previously selected destination folder.

7. The **KODAK Dental Imaging Software** dialog box is displayed.

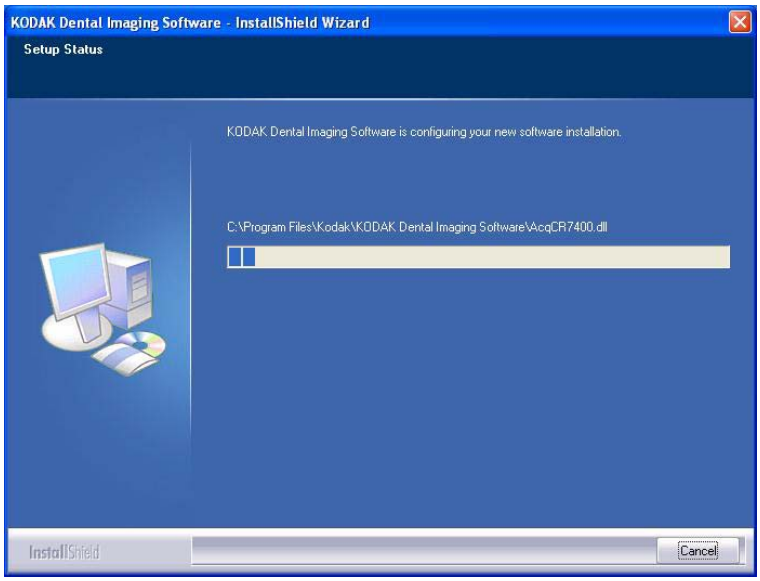


The **Patient file** is selected by default but you must select the radiological device. Click on the drop-down list of **No Pano/Ceph Installation** and select **Panoramic K9000.** Click on the drop-down list of **No 3D Visualization** and select **3D Visualization.** Check that you have selected correctly.



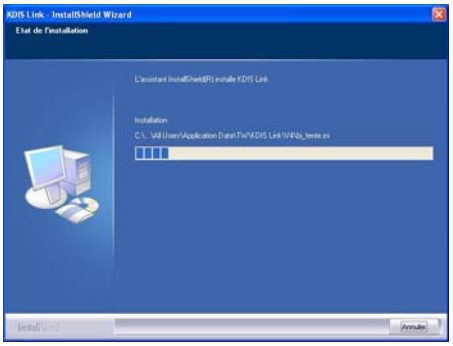
Click **Next** to begin the installation.

8. The **InstallShield Wizard** is displayed. Let the installation process run automatically.

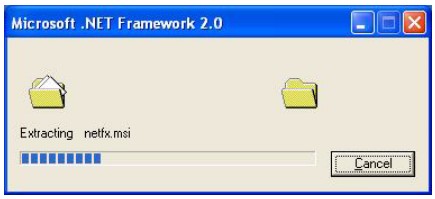

KODAK Dental Imaging Software - InstallShield Wizard
Setup Status
KODAK Dental Imaging Software is configuring your new software installation.
C:\Program Files\Kodak\KODAK Dental Imaging Software\AcqCR7400.dll
InstallShield
Cancel

The **Kodak Patient file - InstallShield Wizard** is displayed while the patient files are installed on the hard drive..

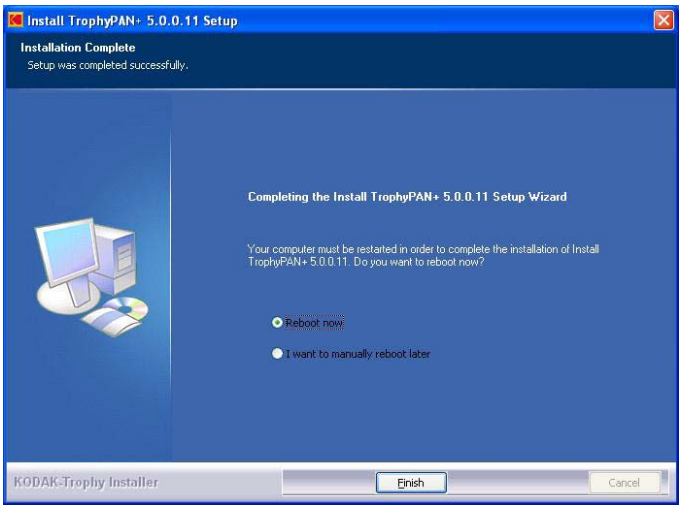
The **KDIS Link - InstallShield Wizard** is displayed while the KDIS link is installed on the hard drive.



The **Microsoft .NET Framework 2.0** is displayed while this software is being installed on your hard disk for 3D visualization.

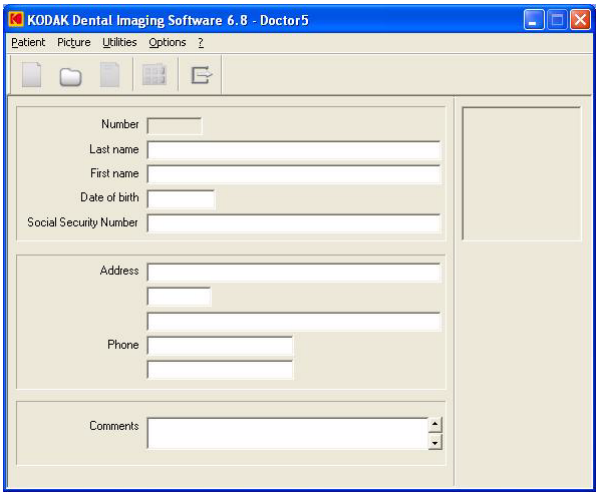


The **Installation Complete** dialog box is displayed when the installation is finished. Click **Reboot now** and click **Finish**.


Install TrophyPAN+ 5.0.0.11 Setup
Installation Complete
Setup was completed successfully.
Completing the Install TrophyPAN+ 5.0.0.11 Setup Wizard
Your computer must be restarted in order to complete the installation of Install TrophyPAN+ 5.0.0.11. Do you want to reboot now?
Reboot now
I want to manually reboot later
KODAK Trophy Installer
Finish
Cancel

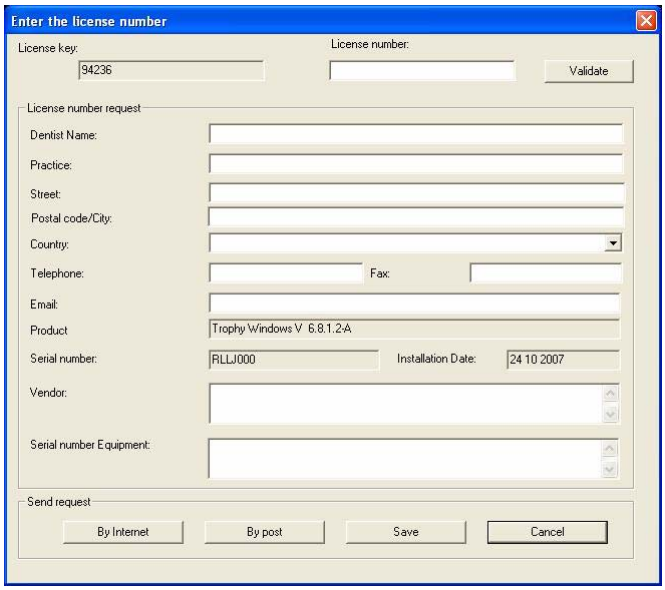
9. The **KODAK Dental Software** and **3D Volume Queu...** icons are installed on your desktop after the reboot.

10. Double-click to open the **Patient Window**.



11. Create a patient record. From the toolbar, click and enter the required patient information. Click to access the **Imaging Window**.

12. The **Enter the licence number** dialog box is displayed. Enter the licence number and click **Validate** if you have the licence number or click **Cancel** to continue.



13. The icon appears on the toolbar of the **Imaging Window**. The installation is finished.

Chapter 6
INSTALLING THE UNIT

Tool Requirements

The installer must supply the following tools:

- Power drill
- Screws and heavy duty fixings
- Spirit level
- Measuring tape
- Cutter
- Metric Allen keys
- Metric spanners

IMPORTANT
The tool references mentioned in this manual are ISO tool references.

Technical Staff Requirements

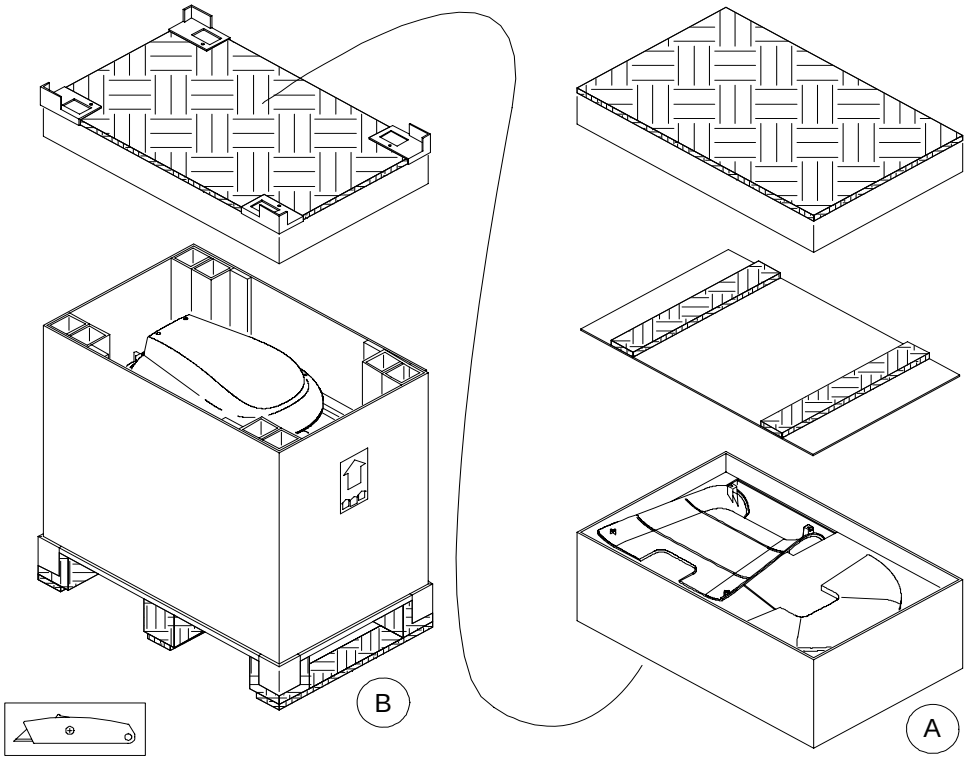
The installation requires the following number of technicians:

Unit Component	Technicians
Head	3
Column	2
Fixed arm	2

Opening the Boxes

To unpack the boxes, follow the instructions for each box.

Opening the Head Assembly Box



Before opening the head assembly box make sure that you have the required tool.

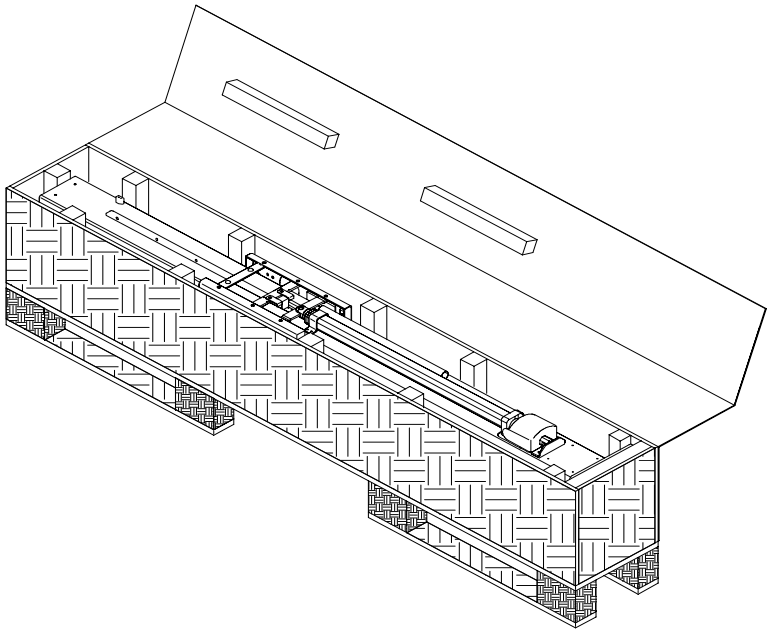
To open the head assembly box, follow these steps:

1. Remove the upper cardboard from the packaging and lift off the packaging carton. DO NOT cut through the cardboard. Remove the upper box (A).

2. Remove the upper cardboard of the lower box (B). Remove with the help of 3 persons the Unit head transport pallet and place it on the ground. Remove the other component boxes.

3. Release the 4 screws securing the metal transport trolley frame to the pallet. Place the transport trolley with the Unit head at the side of the pallet. You can now safely transport the Unit head.

Opening the Column Assembly Box



Before opening the column assembly box make sure that you have the required tool.

To open the column assembly box, follow these steps:

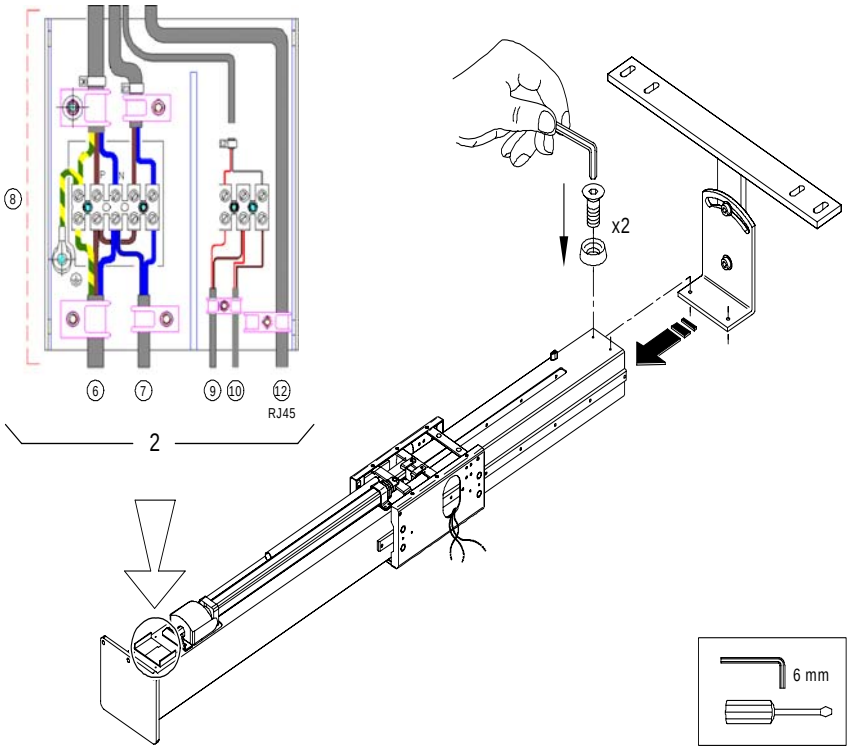
1. Open the carton from the side.
2. Remove with the help of 2 persons the column from its box, using one at each end of the column.
3. Place the column on the floor in a horizontal position. Unwrap the column.

Installing the Unit

Before installing the Unit, check that you have:

- All the necessary tools
- All the cables
- All the switches

Installing the Column



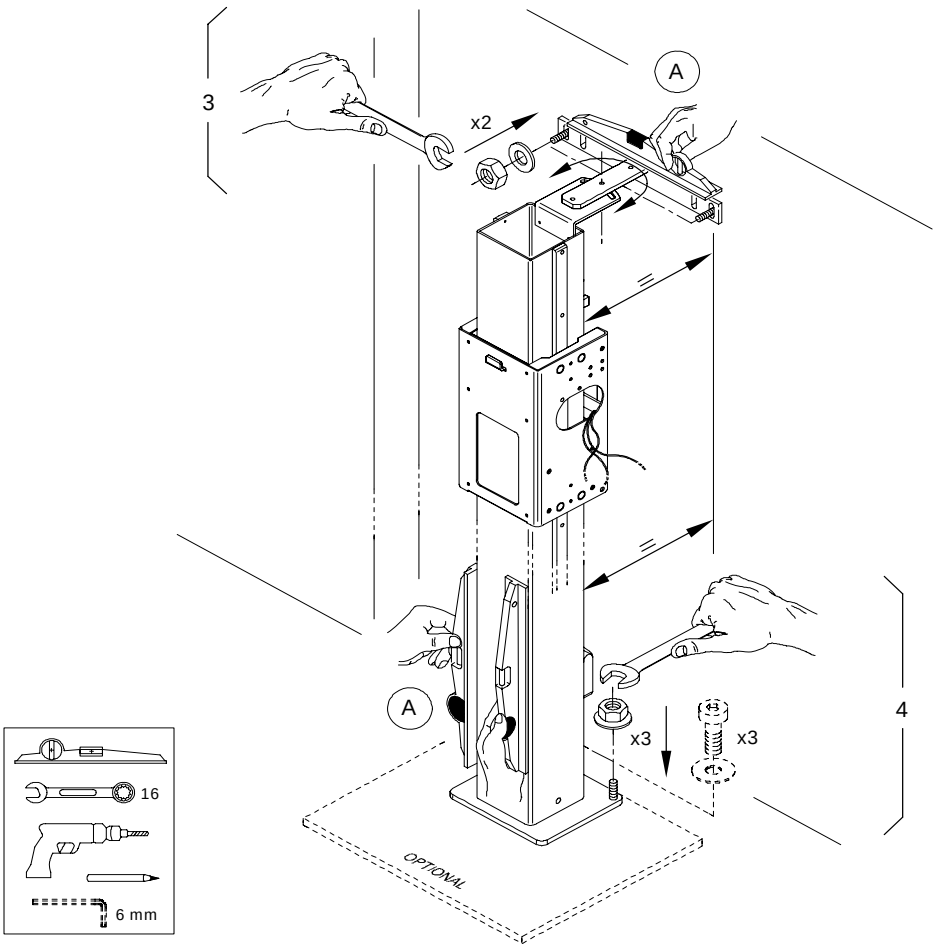
To install the column, follow these steps:

1. While the column is still on the floor, in a horizontal position, fit the wall bracket lips **inside** the column and tighten the 2 screws. If necessary, attach the column to the steel base plate at this time.

2. Connect the following wiring in the column connecting terminal (8):

   - Unit mains connecting terminal (6)
   - Green lamp x-ray emission indicator (7)
   - X-ray remote control (10)
   - Door safety switch (9) (optional)
   - Ethernet outlet (12)

   Depending on the standards in force in your country, we recommend that you also provide the door safety switch (10).



3. Place the column in a vertical position, taking care not to trap any cables between the column and the floor. Hold the mounting bracket against the wall at the top of the column and mark the position of the fixing holes. Move the column to one side and drill the holes.

   IMPORTANT

   You MUST fix the column to the wall. Use the appropriate wall fixing system suitable for the type of wall construction.

   Attach the mounting bracket to the wall and check that the column is correctly positioned using a spirit level (A); then, screw the mounting brackets securely to the wall.

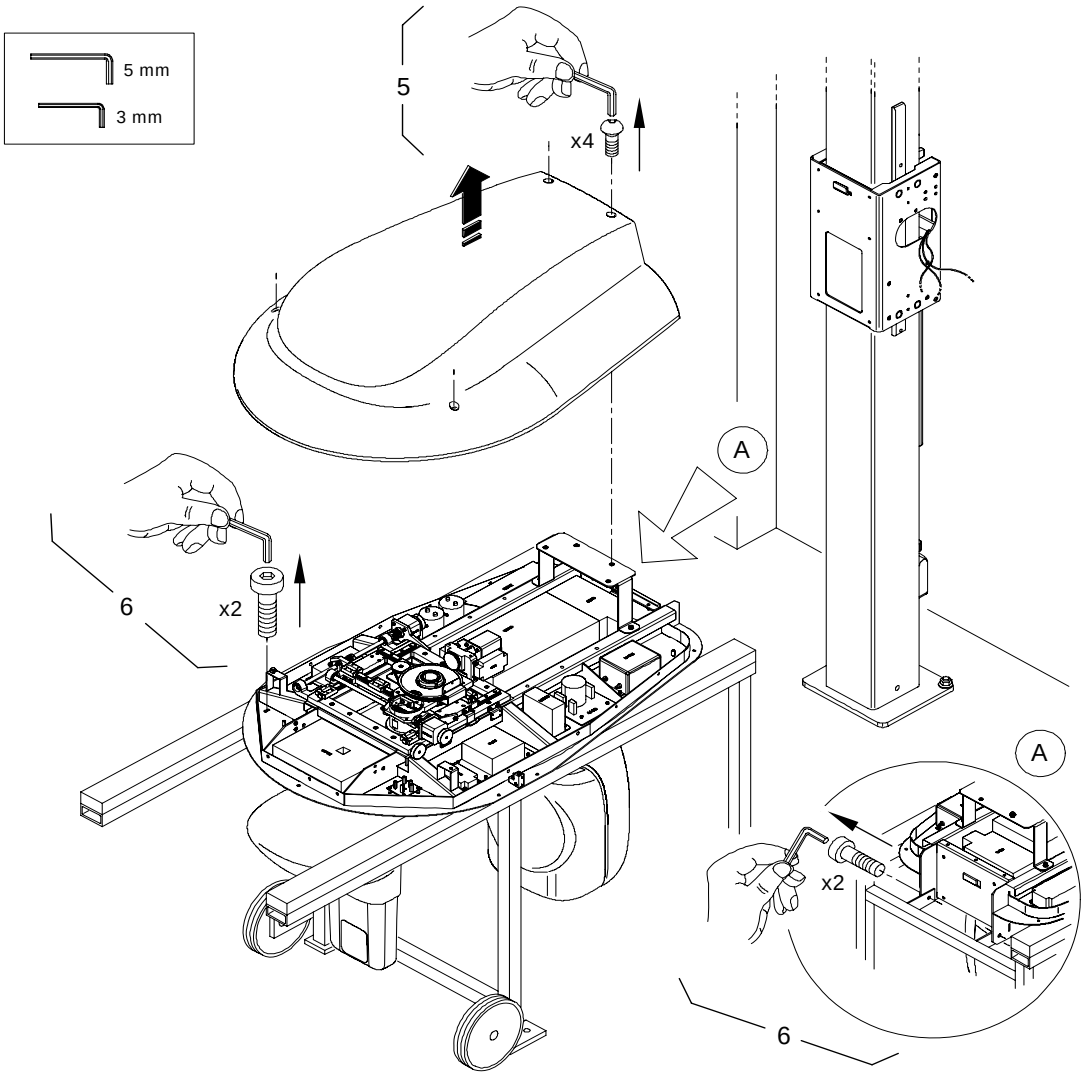
4. Mark the position of the fixing holes at the base of the column. Move the column slightly forward to drill the holes. Place the column in position. Check that the column is correctly positioned using a spirit level (A) and screw the base to the floor tightly.

   You can use the optional base plate if:

   - The floor is inappropriate for column fixation.
   - The client requests no floor fixation.

   The column is ready for the Unit head attachment.

Installing the Head



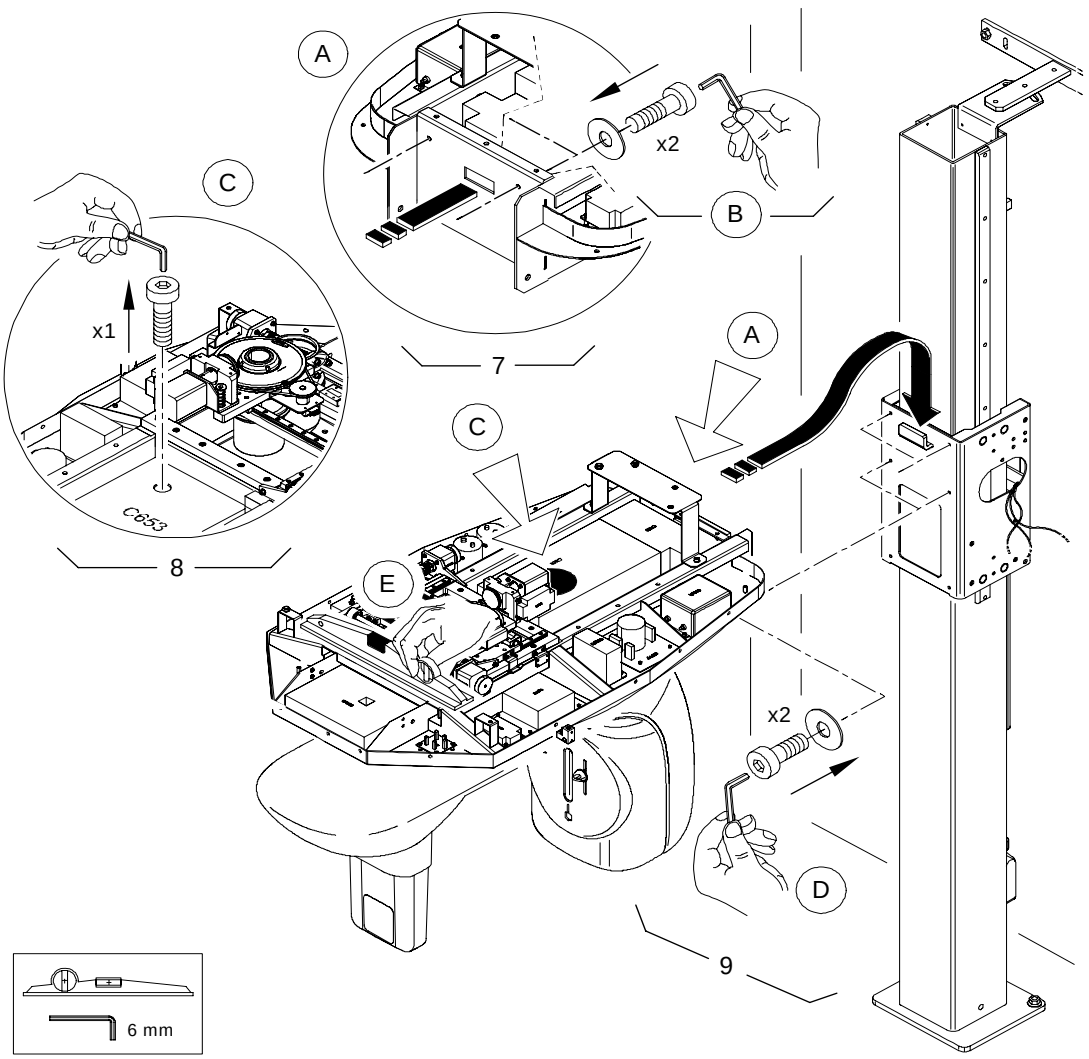
To install the head, follow these steps:

5. Remove the head cover by unscrewing the 4 screws that attaches the head cover to the head chassis.

6. Remove the restraining screws securing the Head to the transport trolley (A).

7. With the help of 3 persons, grasp the Unit head, mount and position it on the hook of the column sliding unit (A). Screw, but do not tighten, the 2 upper screws with washers (B).

8. Release the Unit rotating arm by removing the transit locking screw (C) that passes through the CJ 653 board. Place the screw in the chassis, so that it can be retrieved quickly if the Unit is dismantled at a later date.

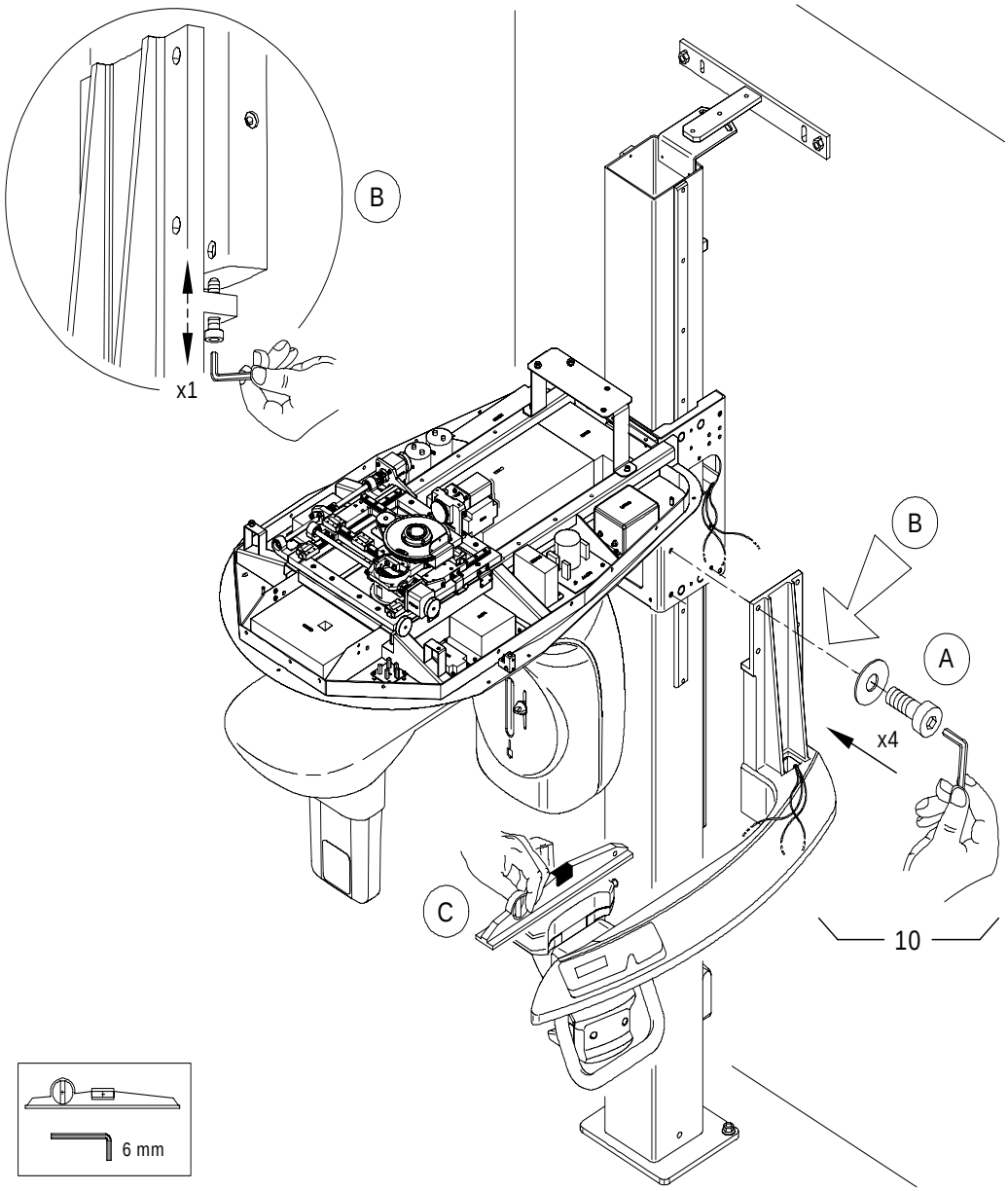


9. Rotate the Unit rotating arm by hand. Screw, but do not tighten, the 2 screws with washers located under the Unit head (D).

   Relieve the weight of the head at the front with the help of 1 person. Check that the head is correctly positioned using a spirit level (E). Tighten the 2 upper (B) and the 2 lower (D) screws with washers of the head assembly.

   The column is ready for the fixed arm attachment.

Installing the Fixed Arm



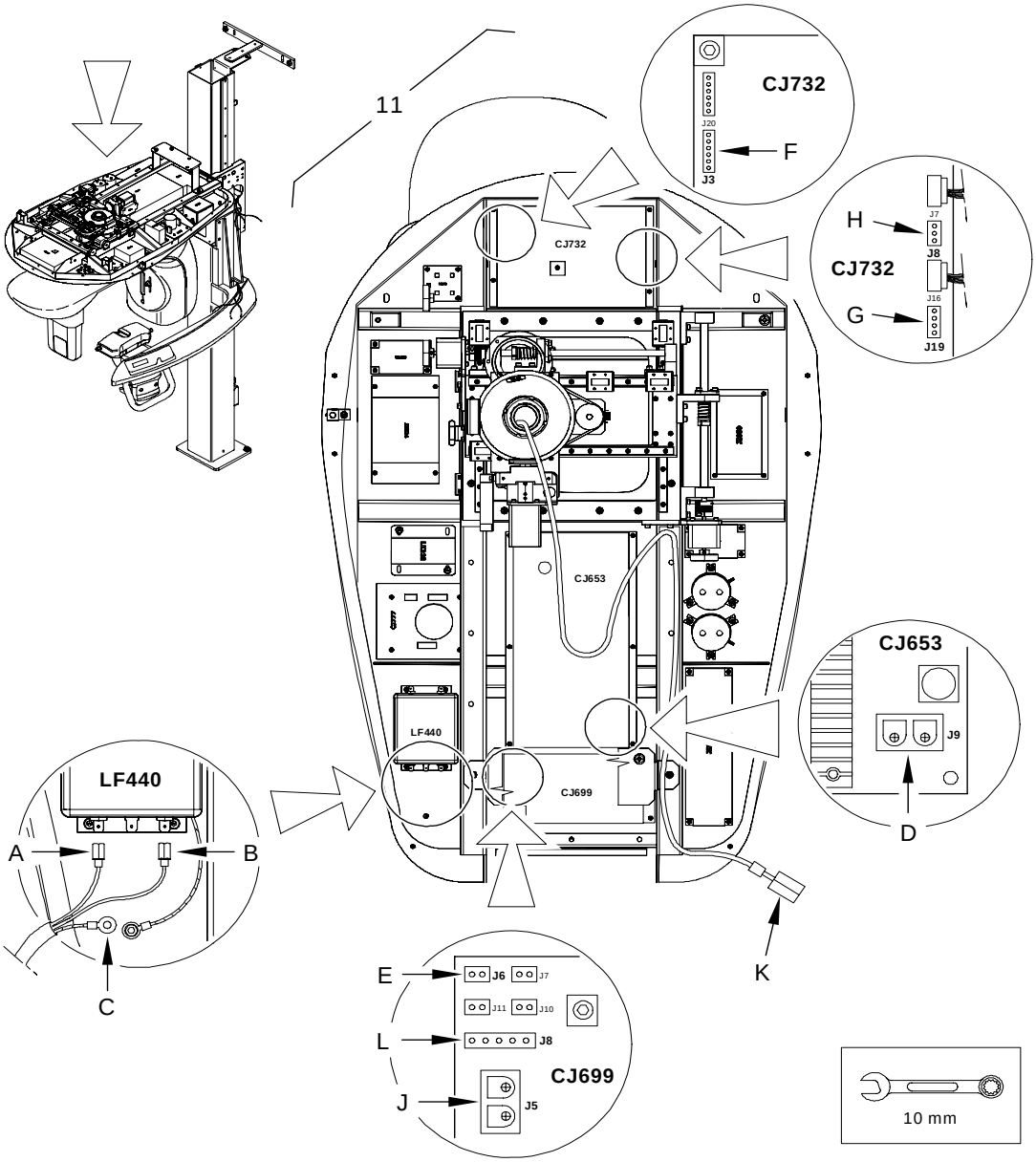
To install the fixed arm, follow these steps:

10. With the help of 2 persons, lift the fixed arm and attach it to the column with 4 screws with washers (A), but do not tighten. Use the level adjustment screw (B) and the spirit level (C) to correctly position the fixed arm; then, tighten the 4 screws with washers (A).

    The Unit is now ready for the general wiring connection.

Connecting the General Wiring

CAUTION
Make sure that the circuit breaker of the Unit is switched off.



To connect the wiring, follow these steps:

11. Connect the following wiring in the indicated order:

    Connect the cables on the right side of the column to the head in the following order:

    - Connect the blue (A) and the brown (B) wires to the line filter input terminals.
    - Connect the yellow-green (C) wire (ground) to the ground post on the side of the

line filter.

- Connect cable 23 to J9 (D) of the CJ653 board

Connect the cables on the fixed arm to the head in the following order:

- Connect cable 5 to J6 (E) of the CJ699 board.
- Connect cable 1 to J3 (F) of the CJ732 board.
- Connect cable 4 to J19 (G) of the CJ732 board.

Connect the cables on the left side of the column to the head in the following order:

- Connect cable 12 to J8 (H) of the CJ732 board.
- Connect cable 36 to J5 (J) of the CJ699 board.
- Connect the Ethernet cable (K).
- Connect cable 37 to J8 (L) of the CJ699 board.

The Unit is ready for the post-installation control.

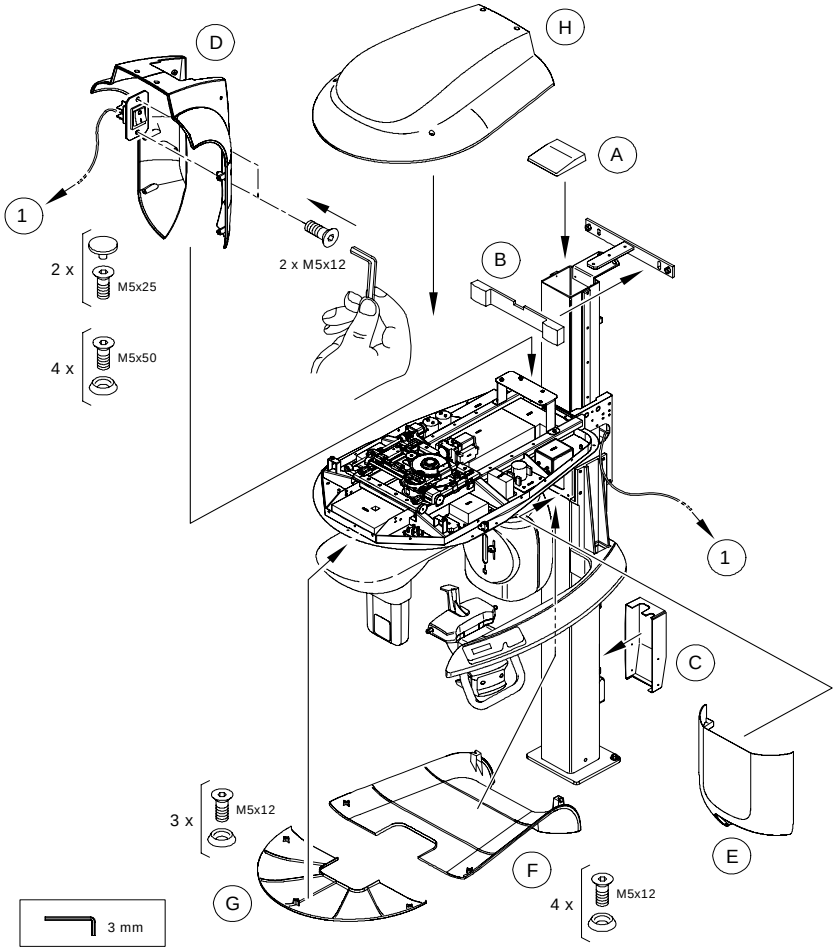
Fitting the Covers

WARNING

Before fitting the covers, you MUST switch off the Unit.

Before fitting the covers check that:

- All the screws in the wall and the floor have been tightened
- All the screws attaching the head and the fixed arm to the column have been tightened



To fit the covers, follow these steps:

1. Fit the upper cover (A) on the column. Fit the cover on the wall-bracket (B). Fit the cover on the column connecting terminal (C) and tighten the 4 screws.

2. Fit the side covers (D) on the column. Position and attach the ON/OFF button to the cover securely with the 2 screws. Fit the cover (E) to the inside of the column. Tighten the screws.

3. Fit the 2 covers (F) and (G) under the head and tighten the screws.

4. Fit the Head cover (H) of the Unit to the head chassis and tighten the 4 screws. You can switch on the Unit now.

Chapter 7
Maintenance

Annual Maintenance

We recommend that a general inspection of the Unit should be carried out every year by an approved dental systems technician.

The inspection should cover the following points:

- Check the attachment points to the floor and the wall.
- Check all the mobile components of the Unit.
- Check the X-ray generator.
- Check the alignment of the x-ray.
- Make an image acquisition with the test tools and check the image.
- Check the focal trough and the symmetry.
- Check the degree of legibility of the labels.
- Check for damage to cables, covers, oil leaks, etc.

If the results of any of these inspections are unsatisfactory, refer to the Service Manual in order to rectify any problems.

If there is any doubt, do not operate the Unit.

Chapter 8
TECHNICAL SPECIFICATIONS

Compliance with International Standards

The KODAK 9000 3D digital imaging Unit is compliant with the International and EEC standards.

Manufacturer

TROPHY

A subsidiary of Carestream Health, Inc.

4, Rue F. Pelloutier, Croissy-Beaubourg

77435 Marne la Vallée Cedex 2, France

Model

KODAK 9000 3D Unit, KODAK 9000 Unit.

Compliance with International Regulations

- Medical Device directives 93/42/ European Economic Community (EEC), Class II b
- ElectroMagnetic Compatibility (EMC) directive 89/336/EEC

Compliance with International Standards

- International Electrotechnical Commission (IEC) 60601-1 Class I Type B
- IEC 60601-1-2, Group I, Class B +12db
- IEC 60601-1-3
- IEC 60601-2-7
- IEC 60601-1-28

Ambient Operating Conditions

- **Temperatures:** 5 ~35 °C
- **Relative humidity:** 30 ~ 85%
- **Atmospheric pressure:** 700 ~ 1060 hpa

Storage Conditions

- **Temperatures:** -10 ~ 60 °C
- **Relative humidity:** 10 ~ 95%
- **Atmospheric pressure:** 700 ~ 1060 hpa

Transport Conditions

- **Temperatures:** -10 ~ 60 °C
- **Relative humidity:** 10 ~ 95%
- **Atmospheric pressure:** 700 ~ 1060 hpa

Unit Technical Specifications

Table 8-1 describes the technical specifications for the KODAK 9000 3D digital imaging unit and Kodak 9000 digital imaging unit.

Table 8–1 Unit Technical Specification

	Kodak 9000 3D	Kodak 9000
X-Ray Generator		
Tube voltage	60 - 90 kV (max), pulsed mode for 3D modality	
Tube current	2 - 15 mA (max)	
Frequency	140 kHz (max)	
Tube focal spot	0.5 mm (IEC 60336)	
Total filtration	> 2.5 mm eq. Al	
3D Modality		
Technology	Digital Volumetric Tomography (DVT)	NA
Sensor technology	• CMOS • Optical fiber sensor with Csi coating	NA
Gray scale	16384 - 14 bits	NA
Volume size	50 x 37 mm	NA
Voxel size	76.5 x 76.5 x 76.5 µm	NA
Reconstruction time	Depends on the PC	NA
X-ray pulse time	30 ms	
Panoramic Modality		
Sensor technology	• CCD • Optical fiber sensor with Csi coating	
Sensor matrix	61 x 1244 pixels	
Image field	6.3 x 129.4 mm	
Gray scale	16384 - 14 bits	
Magnification	1.27	
Exposure time	• Adult panoramic 13.9 sec. • Pediatric panoramic 13.2 sec.	
Programs	12 anatomical settings	
Radiological exam options	• Panoramic • Segmented panoramic • Maxillary sinus • LATMJ x2 • LA TMJ x4	

Table 8–1 Unit Technical Specification

	Kodak 9000 3D	Kodak 9000
Input voltage	• 230 / 240 V - 50/60 Hz • 100/110/130 V - 50/60 Hz	
Unit dimensions	1158mm (L) x 1595mm (D) x 2378mm (H)* * Unit with shorter column is available on special order	
Required space	1500 (L) x 2000 (D) x 2400 (H) mm	
Weight	160 kg (353 lb)	

Unit Electronic Specifications

Type of Electrical Power Supply	230/240 V (± 10%) 50/60 Hz, Single-Phase	100/110/130V (± 10%) 50/60 Hz, Single-Phase
Acceptable fluctuation	± 10%	± 10%
Apparent resistance of the power supply circuit	0.5 Ω (max.)	0.12 Ω (max.)
Permanent absorbed current	0.45 A	0.9 A
Current absorbed during the x-ray emission	9.5 A	22 A
Maximum absorbed power	2.2 kVA	2.2 kVA
Protection for the power supply system	By shutter release at a maximum current of 16A and a differential current of 30 mA	By shutter release at a maximum current of 20A and a differential current of 30 mA
Nominal high voltage	90 kV	90 kV
Maximum corresponding tube current	10 mA	10 mA
Nominal tube current	15 mA	15 mA
Maximum corresponding high voltage	80 kV	68 kV
Tube current/voltage combination for maximum output power	80 kV, 15 mA	85 kV, 12 mA
Nominal power for an exposure time of 0.1 s.	at 80 kV, 15 mA: 1200 W	at 85 kV, 12 mA: 1020 W

Utilization Rate in Continuous Mode (for example: one exposure - 85 kV, 5 mA - 13.9 second, every 3 minutes)	Utilization Rate in Intermittent Mode (for example: one exposure - 80 kV, 15 mA - 13.9 second, every 3 minutes)
33 W	93 W

Selection of the Load Parameters:	
kV (in increments of 1 kV)	From 60 to 90 kV
mA (in increments of 25%)	From 2 to 15 mA

Cooling Conditions	
Maximum dissipation of heat from the x-ray radiogenic assembly into the ambient air (for utilization rate in continuous mode)	33 W

Accuracy of the Load Parameters	
High voltage	kV ± 10%
Current in the tube	mA ± 20%
Exposure time seconds	Seconds ± (10% + 1ms)

Measurement Conditions	
kV	Indirect on the peak kilovolt meter
mA	Direct measurement in the circuit using an oscilloscope
Exposure time	Measurement at 75% of the kV values with peak kilovolt meter

X-Ray Generator Technical Specifications

Table 8–2 Filtration of the Material in the X-ray Field

Standard	Compliance
IEC 60601.1.3	Compliant
Nominal value of the inherent filtration at 70 kV	2.5 mm (0.10") eq. Al
Nominal value of the supplementary filtration at 70 kV	NA
Nominal value of the total filtration at 70 kV	2.5 mm (0.10") eq. Al
Filtration value for the enclosure of the x-ray tube (at 100 kV)	0.2 mm (0.008")
Filtration value for the enclosure of the image receiver unit (at 100 kV)	0.2 mm (0.008")
Filtration value for the sensor case	0.8 mm (0.031") eq. Al

The x-ray generator comprises the following:

- A transformer and an x-ray tube and their associated electronic components immersed in oil
- An aluminum filter, which enhances the quality of the beam and reduces the dose received by the patient
- A lead collimator, which limits the size of the beam at the image receiver unit
- A thermal cutout, which trips at an operating temperature between 63 to 70° C (± 5° C)

Table 8–3 Technical Specifications of the X-ray Generator

Standard	Compliance
IEC Standard 60601.2.28	Compliant
Manufacturer	Trophy
Degree of protection against electric shock	Class I
Degree of patient protection from the parts applied to the leakage current	Type B
Maximum accumulated heat	110 kJ
Maximum continuous heat dissipation	33 W
Tolerances on the position of the focal spot	+/- 2.5mm
Radiation leakage after one hour's operation (maximum utilization rate of 93W, i.e. 90 kV, 10 mA, 13.9 sec. every 2 minutes 15 sec.)	< 1 mGy
Weight	8.2 kg
Dimensions	235 x 245 x 120 mm

Figure 8–1 Heating and Cooling Curves of the X-ray Generator.

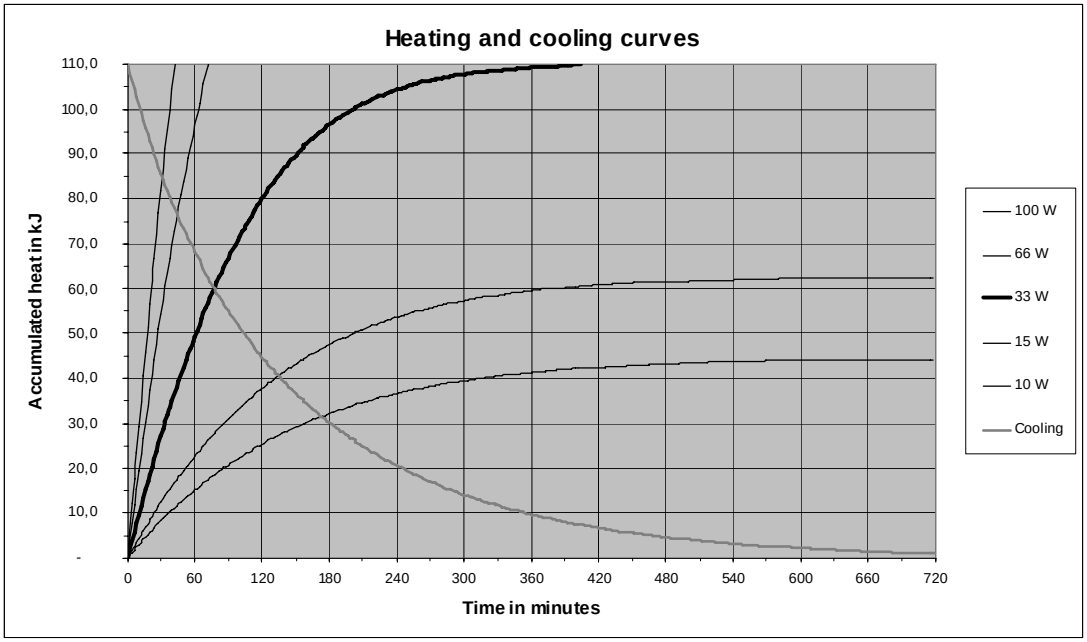


Table 8–4 Beam Limitations of the X-ray Generator

Manufacturer	Trophy
Type	Rigidly mounted unit with fixed window dimensions, not removable, and integrated x-ray generator
Maximum symmetrical field of radiation at a distance of 613 mm from the focal point (Panoramic mode)	4 (-0.5/+1) x 128 (± 2) mm
Maximum symmetrical field of radiation at a distance of 690 mm from the focal point (3D mode)	47 (± 1) x 59 (± 1) mm

Table 8–5 Characteristics of the X-ray Tube

Manufacturer's name	CEI
Type	OPX 105
Nominal high voltage	90 kV
Nominal anode power	810 W
Maximum amount of heat accumulated in the anode	30 kJ
Nominal focal spot diameter (IEC 60336)	0.5 mm (0.020")
Anode materials	Tungsten
Target angle	5°
Inherent filtration	0.5 mm (0.20 ") eq. Al

Figure 8–2 Heating and Cooling Curves of the X-ray Tube

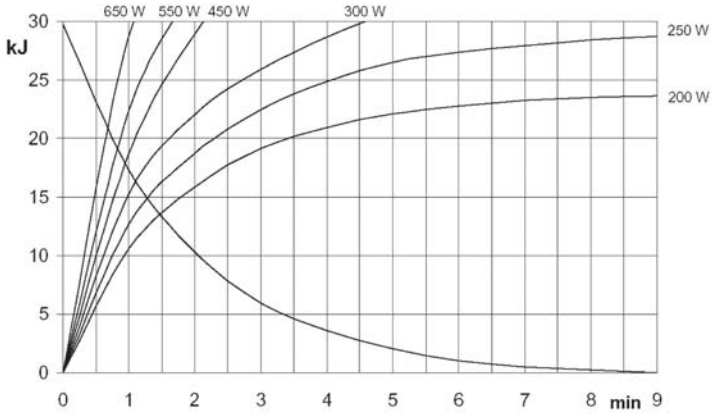


Figure 8–3 Single Load Chart of the X-ray Tube

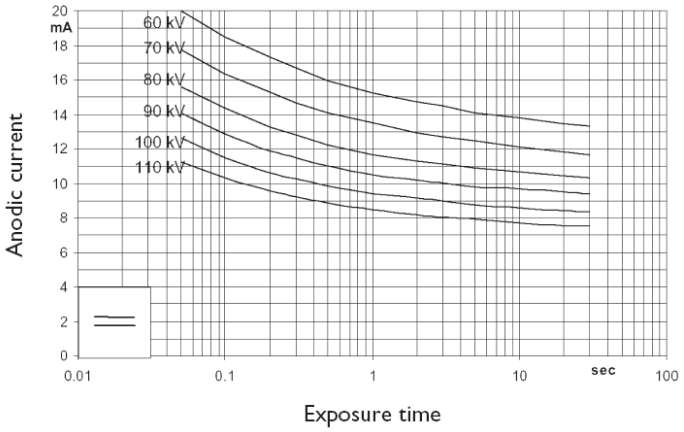


Figure 8–4 Filament Emissions of the X-ray Tube